Proposal for economic and financial incentives for e-mobility in Montenegro

Study prepared by Energy Institute Hrvoje Požar | Zagreb | February 2019
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1. INTRODUCTION

The Purpose and Objective of this Document

The development of the e-mobility market is based on the attractiveness of electric vehicles for the end-buyer or user of that vehicle – the electric vehicle needs to be more attractive from the financial and nonfinancial aspect to the buyer/user than the conventional vehicle. The attractiveness of an electric vehicle depends on a number of factors, such as those specific to a particular market (legislation, incentives, infrastructure availability) as well as general factors that equally affect any market (battery capacity or range of vehicles). Therefore, the promotion of mobility includes a whole range of activities from formulating state incentives, creating conditions for the development of CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES, designing the legislative and regulatory framework as the basis for the development of market and business models, as well as implementing a range of promotional and public awareness measures directed at individuals, public sector and private legal entities. The factors that influence the development of e-mobility market are shown in the figure below.

![Figure 1: Factors Influencing the e-Mobility Market](https://www.accenture.com/_acnmedia/PDF-37/accenture-electric-vehicle-market-attractiveness.pdf)

This document is precisely focused on the elements of state incentive policy which may stimulate the development of e-mobility in Montenegro. The recommendations are based on previously prepared studies, as part of the UNDP’s “Feasibility Study of the e-Mobility Concept in Montenegro” project:

1. Situational Analysis of the Legislative, Institutional and Financial Framework for e-Mobility in Montenegro;
2. Analysis of e-Mobility Market in Montenegro; and
3. Cost and Benefit Analysis of the e-Mobility Concept in Montenegro - Case Studies.

The following incentives were considered:

1. Fiscal incentives – use of the tax system for the purpose of promoting the purchase and use of electric vehicles;

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1 Source: [https://www.accenture.com/_acnmedia/PDF-37/accenture-electric-vehicle-market-attractiveness.pdf](https://www.accenture.com/_acnmedia/PDF-37/accenture-electric-vehicle-market-attractiveness.pdf) (the website accessed on 27 May 2019)
2. Financial incentives - instruments to reduce purchase price differences between classical and electric vehicles, and instruments for the development of CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES;

3. Non-financial incentives - measures that may be implemented at the national or local level, which will make the purchase and use of electric vehicles more attractive.

The proposed incentives in all three categories represent a comprehensive approach to encourage the introduction of mobility in Montenegro. However, the use of all these incentive measures depends on many factors and the engagement of various stakeholders. That is why the emphasis is placed on the incentives that can be provided by the State, which are certainly the financial incentives from the Eco Fund.

Namely, with the Eco Fund establishment, Montenegro established the central institution for the collection of funds and their dedicated distribution to environmental projects and programs, which explicitly includes the promotion of cleaner traffic and the use of alternative fuels in transport. This way Montenegro joined other countries in the region, where such funds are operated and successfully promote e-mobility (Croatia, Slovenia). The Eco Fund is expected to become operational in the second half of 2019. Given that this is a completely new institution, whose main task is to promote and stimulate activities that contribute to the protection of the environment, it is extremely important that the Eco Fund becomes recognizable and positively accepted by the general public at the beginning of their activities. The e-mobility incentive scheme can certainly contribute to this goal and ensure favorable prerequisites for the Eco Fund operation in other areas as well.

In doing so, the incentive scheme implemented by the Eco Fund must be simple and attractive to end users, not administratively demanding given the limited capacity of the Eco Fund, at least initially, transparent and accompanied by strong promotional and public awareness raising activities. These were the main postulates on which the proposal made in this document was based.

In order for the Eco Fund to carry out an incentive scheme, it is extremely important to provide sufficient revenues for this purpose. Given the importance of transport in achieving energy and climate goals, it is expected that Montenegro will have access to international funds that could be directed to e-mobility by the Eco Fund. However, it is also necessary to ensure stable sources of revenue, and this aspect is also addressed in this document.

Document Structure

Chapter 2 provides an overview of potential e-mobility incentives in Montenegro in all three categories listed above.

Chapter 3 provides a proposal for the Eco Fund activities to stimulate e-mobility in Montenegro, which includes an analysis of possible revenues and a proposal for the operation of the incentive scheme for electric vehicles and the CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES.

Chapter 4 includes the main conclusions of the conducted analysis.
2. OVERVIEW OF POSSIBLE INCENTIVES FOR E-MOBILITY IN MONTENEGRO

INCENTIVES FOR ELECTRIC VEHICLES

With regard to certain technological features of electric vehicles that represent disadvantages compared to conventional vehicles (charging time, lower range), any yet primarily due to still high purchase prices, countries that have opted for the development of e-mobility have designed a series of measures aimed at increasing the attractiveness of their purchase and use. Generally, incentives can be divided into fiscal measures, financial measures and non-financial measures.

2.1.1. Fiscal Incentives

It is stipulated by the Law on Tax on the Use of Passenger Motor Vehicles, Vessels, Airplanes and Aircrafts ("Official Gazette of the Republic of Montenegro", 28/2004 1 37/2004 and "Official Gazette of Montenegro", 86/2009) that the tax is paid annually according to the engine's operating volume. Taxes on motor vehicles are calculated by motor vehicle owners. Tax is payable upon registration of the motor vehicle. The Ministry of Interior is responsible for the control of taxation. Motor vehicles cannot be registered without proof of payment of tax. **No motor vehicle tax is paid for electricity powered motor vehicles.** The exemption from payment of this tax represents the existing incentive for the purchase of an e-vehicle. Revenues collected on this basis are entirely directed to the State budget. Taking into account that the use of vehicles is an extremely high source of pollution, it would be absolutely justified to allocate funds from this tax to the Eco Fund to be intended for projects that reduce pollution from traffic, such as promoting the purchase of electric vehicles and developing charging infrastructure. It should be noted here that there is space and reasoning for amendments to this Law. Namely, the tax calculation is exclusively based on the engine volume/power with additional tax reduction for older vehicles, which is not environmentally friendly because it does not take into account the ecological characteristics of the vehicle, such as the CO₂ emission data, for example. Therefore, this Law has to be amended and the collected funds need to be transferred to the Eco Fund. It is necessary to keep the tax exemption for electric vehicles.

Other obligations to pay various fees related to vehicles are based on the following acts²:

- Decree on the costs of technical inspection of vehicles ("Official Gazette of Montenegro" 16/2013) – determining the technical inspection costs by vehicle type and volume
- Decision on determining an annual fee for the use of roads payable at the registration of motor vehicles, tractors and towed vehicles ("Official Gazette of the Republic of Montenegro", 60/2005) – determining an annual fee for the use of roads payable at the registration of motor vehicles, tractors and towed vehicles, according to the engine type and volume and depending on the type of vehicle
- Decision on determining a special fee for motor vehicles and towed vehicles ("Official Gazette of the Republic of Montenegro", 60/2005) – determining a special fee for motor vehicles and towed vehicles for the purpose of ensuring the smooth running of the traffic and the provision of information services to the road users, depending on the type of vehicle;
- Rulebook on registration of vehicles ("Official Gazette of Montenegro" 10/2015, 21/016, 43/2016, 42/2017) – specifying the price for registration plates depending on the type of vehicle

E-vehicles are not recognized specifically by any of these acts, i.e. they are not exempted from the payment of the aforementioned fees. The introduction of the exemption for payment of some of these fees may be...

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²**UNDP Montenegro: Situational Analysis of the Legislative, Institutional and Financial Framework of Montenegro for e-Mobility, produced by ELHP, February 2019.**
considered as an additional measure to promote e-mobility, any yet it will not significantly affect the improvement of vehicle's financial viability and ultimately the decision to purchase an e-vehicle.

It is recommended to promote tax on the use of motor vehicles as an important incentive for e-vehicles and modify this tax so that it has a strong ecological character, and to direct these tax revenues to the Eco Fund to be dedicated to incentivizing e-mobility and other projects for clean transport.

2.1.2. Financial Incentives

Financial incentives are needed to foster market development and are introduced when the market is not sufficiently developed to accept products and services that bring wider social benefits.

The social benefit of e-mobility can best be seen by monetizing social benefits. In the period up to 2050, with the realization of the foreseen increase in the number of registered electric vehicles in Montenegro, the total monetized social benefit of avoided CO₂ emissions amounts to approximately EUR 530 million. In addition, there are other benefits that cannot be monetized, but their benefits cannot be neglected. This is particularly related to the development of electric vehicle charging infrastructure and the development of new related services, which is an important component of economic development through the development of new 'green' jobs. Also, the development of e-mobility increases the attractiveness of Montenegro as a tourist destination and at the same time an environmentally conscious State.

The Montenegrin e-mobility market analysis argued that the market was at an early stage of development with the observed positive tendencies of development on the supply side, whereas a stronger stimulus for further development would be needed on the demand side. The products, technical knowledge and experience available in such market conditions are sufficient and capable of covering current demand, which is very low. For this reason, demand should be stimulated by policy instruments.

Recognizing the social benefit of e-mobility and the market situation, financial incentives are seen as a necessary and crucial mechanism for stimulating demand. Increased demand will be the best stimulus for the supply side, which can already now be said to be aware of the changes that follow and to be taking certain activities to meet an increased demand, in line with their business interests.

The financial analysis has shown that direct incentives for the purchase of electric vehicles in the public and private sector played a crucial role in the cost-efficiency of such investments. In case of no incentive, the net present value is positive, the return period of the investment is less than 15 years, and the profitability index is greater than 1 only when the vehicle exceeds 20,000 km per year or more. The previous market research found that only 18% of the population annually exceeded 15,000 km. Consequently, it is concluded that it is necessary to provide financial incentives for the purchase of electric vehicles by individuals, with the aim of initiating the development of e-mobility in Montenegro.

The same is true for the public sector, where the financial indicators are even more unfavorable, which is why the input parameters based on the purchase of electric vehicles are used, in comparison to conventional low-priced vehicles.

With regard to the private sector, the diversity of business activities and the way of using transport means makes it impossible to make a general conclusion about the need and the amount of incentives for the purchase of electric vehicles. With high annual mileage, and in the case of high-class vehicles, an electric vehicle compared to a conventional high-class vehicle that provides transfer service is viable without any financial incentives. It seems that the analysis in many private entities would nevertheless show that incentives play a crucial role in assessing cost-effectiveness and making the decision to purchase electric vehicles. Other, above all promotional effects, should also be taken into account if, by granting financial incentives, a number of business entities decided to purchase electric vehicles.

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4 UNDP Montenegro: Analysis of e-Mobility Market in Montenegro, produced by EIHP, April 2019.
It is recommended to establish an incentive scheme for electric vehicles. The scheme should be implemented and promoted by the Eco Fund, covering all three target groups: individuals, public sector and private sector.

Detailed recommendations on the characteristics of the incentive scheme for electric vehicles are given in Chapter 3.

2.1.3. Non-Financial Incentives

Non-financial incentives are mostly within the competence of local self-governments (municipalities) and are manifested in the granting of special privileges to electric vehicles in comparison to conventional ones, such as measures allowing preferential parking for electric vehicles or limiting access to motor vehicles with internal combustion, measures to encourage greater use of electric vehicles among taxi drivers and rent-a-car companies, or for example measures to raise public awareness and publicize the use of electric vehicles.

Such measures are considered as indirect measures to produce the effect of comparative advantage of electric vehicles in the form of time savings and increased comfort.

In this context, it is possible to identify activities that could potentially be carried out in the territory of Montenegro:

- Permitted entry into the downtown area, where traffic is normally prohibited or restricted;
- Reserved parking spaces only for electric vehicles in public parking lots and garages, very often free of charge;
- Cheaper licensees and more licenses for taxi electric vehicles;
- Discounts on the price of ferry or tunnel tickets;
- Promotional and awareness raising public events related to e-mobility.

INCENTIVES FOR CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES

In order to align the dynamics of the increase in the number of electric vehicles and the number of places for their charging, it is necessary, in parallel with the stimulation of electric vehicles, to also take measures to stimulate the development of infrastructure for charging electric vehicles. In addition to co-financing the development of charging stations, it is also important to produce an appropriate legislative framework to create a market model that enables their commercialization. This opens space for business entities to recognize the possibility for creating business models and make a financially viable investment.

In considering the drafting or amendments to the legislative framework for the development of charging infrastructure for electric vehicles, it is necessary to take into account the Directive of the European Parliament and the Council on common rules for the internal electricity market and amendments to Directive 2012/27/EU (amendment) (8 May 2019)\(^5\) which set out market rules that should contribute to the creation of favorable conditions for electric vehicles of all kinds, i.e. ensure the effective introduction of publicly available and private electric vehicle charging points and the effective integration of vehicle charging into the system. Some key provisions of this Directive are outlined below:

- Energy management is crucial to enable smart vehicle charging and efficient integration of electric vehicles into the power grid, which will be of crucial importance for the transport decarbonisation process;

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\(^5\) The text of the Directive can be accessed at: https://www.consilium.europa.eu/register/en/content/out?typ=SET&i=ADV&RESULTSET=1&DOC_TITLE=&CONTENTS=&DOC_ID=10%2FF19&DOS_INTERINST=&DOC_SUBJECT=&DOC_SUBTYPE=&DOC_DATE=&document_date_from_date=&document_date_to_date=&document_date_from_date_submit=&document_date_to_date_submit=&MEET_DATE=&meeting_date_from_date=&meeting_date_to_date=&meeting_date_from_date_submit=&meeting_date_to_date_submit=&DOC_LANCD=EN&ROWSPP=25&NRROWS=500&ORDERBY=DOC_DATE+DESC (the website accessed on 27 May 2019) – at the time of drafting this document, the Directive was not yet published in the Official Journal of the European Union.
• Consumers should be able to use, store and sell the self-produced electricity on the market and participate in all the electricity markets by providing system flexibility, for example by storing electricity, for example by using electric vehicles, energy management or energy efficiency programs;

• Distribution system operators need to integrate new ways of electricity production in a cost-effective manner, especially those that produce renewable energy sources and new loads, such as loads coming from heat pumps and electric vehicles. For this purpose, distributing systems operators should be enabled and encouraged to use, based on market procedures, the services using distributed energy sources such as energy management and energy storage, to effectively manage their networks and avoid costly network expansions. Member States should establish appropriate measures such as national network rules and market rules, and provide incentives for distribution system operators using network tariffs that do not prevent the flexibility or improvement of energy efficiency in the network. Member States should also introduce network development plans for distribution systems to support the integration of renewable energy production facilities, facilitate the development of energy storage facilities and the electrification of the transport sector and provide system users with relevant information regarding the envisaged extensions or network upgrades because at present, in most Member States, no such procedure exists.

• The states provide the necessary regulatory framework to facilitate the connection of publicly available and private charging stations to distribution networks. Member States will ensure that distribution system operators cooperate on a non-discriminatory basis with any undertaking that owns, develops or operates electrical vehicle charging stations, including their connection to the grid.

• Distribution system operators shall not own, develop, run or operate the electric vehicle charging stations, except for the private charging stations solely owned by the distribution system operators for their own use (there are certain exceptions defined in Article 33 paragraph 3).

Montenegro has to align the electricity market legislation with the new Directive on internal electricity market, which will further contribute to the development of e-mobility and its integration into the electric power system. It is particularly important, through the tariff system, to enable the development of business models for the provision of electric vehicle charging services.

With regard to the co-financing program for the construction of charging infrastructure for electric vehicles, it is generally recommended that the construction be encouraged taking into account Directive 2014/94/EU on the establishment of infrastructure for alternative fuels. Below are some key definitions provided in this Directive:

• Charging of electric vehicles at charging points should, if technically and financially feasible, be carried out by intelligent metering systems so that battery charging from the power grid, in periods when the total electricity demand is reduced, would contribute to the stability of the power system and also enable secure and flexible data processing - this could in the long run also enable powering the grid from the batteries of electric vehicles during periods when the total electricity demand is high;

• The installation and use of electric vehicle charging points should be developed as a competitive market open to access by all parties interested in the introduction or operation of charging infrastructure;

• Low voltage charging point means a charging point that allows the transfer of electric power to an electric vehicle whose power is equal or less than 22 kW, with the exception of devices whose power is less than or equal to 3.7 kW installed in private households or whose primary purpose is not to charge electric vehicles and which are not publicly available;

• High voltage charging point means a charging point that enables the transfer of electricity to an electric vehicle of more than 22 kW;

• Publicly available charging point means a charging point where power supply is provided and which allows non-discriminatory user access. Non-discriminatory access may include various features of authentication, use and payment;
All publicly available charging points for electric vehicle users also need to provide the possibility of charging on an ad hoc basis without the conclusion of a contract with the respective electric power supplier or operator.

With regard to technical specifications, equipping of low voltage or high voltage charging points is regulated under Annex II to Directive 2014/94/EU:

- Low voltage motor vehicle charging points: because of their interoperability, the AC low voltage motor vehicle charging points will be equipped with at least sockets or connectors for Type 2 vehicles according to EN62196-2. These sockets may be equipped with additional elements such as mechanical fasteners, where compatibility with Type 2 is maintained.
- High voltage vehicle charging points: because of interoperability, the AC high voltage motor vehicle charging points will be equipped with at least sockets or connectors for Type 2 vehicles according to EN62196-2. Because of their interoperability, the DC high voltage motor vehicle charging points will be equipped with at least the connectors for the combined charging system according to EN62196-3.

Montenegro has to establish an incentive scheme for the development of electric vehicle charging infrastructure for all legal entities, in a manner that taken into account all technical requirements of Directive 2014/94/EU.

PROMOTION OF E-MOBILITY

Given that electric vehicles and e-mobility are new concepts in Montenegro, their strong promotion and detailed information on the benefits, but also on how to use electric vehicles, is needed. Promotional and public awareness raising activities should be carried out by competent state institutions, local self-governments and civil society organizations, especially those promoting sustainable development and environmental protection, as well as educational institutions. In order to stimulate such activities, the Eco Fund, as a future central institution for the promotion of environmental protection, should launch such campaigns. Experience from similar programs in the region has shown that a combination of promotional campaigns with financial incentives was one of the most effective ways to raise awareness of the general public. It is therefore recommended that the Eco Fund will prepare and launch a strong promotional e-mobility campaign, immediately prior to publishing the financial incentive scheme.

Based on the conducted market analysis\(^6\), recommendations may also be given for focusing the campaign and formulating key messages:

1. Characteristics of e-vehicles - a survey showed that only ¼ of the citizens are well acquainted with the characteristics of e-vehicles and over 90% of them do not have the experience of driving such vehicles - the campaign should certainly include car dealers/distributors and allow trial runs and similar activities that will bring such vehicles closer to individuals;

2. Ecological benefits of e-vehicles - although this is recognized by individuals as one of the most important characteristics of e-vehicles, further awareness is needed not only on CO\(_2\) emissions but also on the benefits of such vehicles in terms of reducing local air pollution;

3. E-vehicle charging - lack of public infrastructure for e-vehicle charging is perceived as the most important barrier for e-vehicle purchase by more than 2/3 of individuals - the campaign has to clearly promote slow home charging during the low tariff period, whereby the highest cost-effectiveness of an e-vehicle is achieved; it is also proposed that the Eco Fund will produce a map of available public charging stations in order to make the information easily accessible to everyone;

\(^6\) UNDP Montenegro: Analysis of e-Mobility Market in Montenegro, produced by EIHP, April 2019.
4. **Financial cost-effectiveness of e-vehicles** - this component of the campaign must certainly be linked to financial incentives and point to the cost-efficiency of e-vehicles with the offered incentives; it is also proposed that the Eco Fund will place on their website a simple tool (calculator) to calculate the cost-effectiveness of an e-vehicle investment.

In addition to the central campaign to promote e-mobility in Montenegro, which is planned to be implemented by the Eco Fund, there are numerous other opportunities for promotional and public awareness raising activities, which may also be partially initiated by the Eco Fund in cooperation with other institutions and organizations such as:

- Organization of various professional events (conferences, forums, round table discussions, etc.) to present the examples of good practices from the EU, the region and Montenegro related to e-mobility;
- Organization of public events for individuals targeting the promotion of e-mobility (e.g. within the EU Sustainable Mobility Week);
- Organization of activities and development of public awareness raising materials directed at younger generations (kindergartens, schools);
- Inclusion of e-mobility in curricular and extracurricular programs at schools and universities, which will be certainly significantly contributed by the establishment of e-Mobility Lab within the Center for Engine and Vehicles of the Faculty of Mechanical Engineering in Podgorica;
- International co-operation in research and development of e-mobility.

**Information, public awareness raising and promotion are key to the acceptance of the e-mobility concept. The most efficient way to raise awareness is a combination of information and public awareness promotional campaigns with financial incentives. For this reason, it is essential that such campaigns are mandatory, in addition to the future scheme of financial incentives. This is where the key role of the Eco Fund is seen, to organize activities aimed at raising the knowledge and awareness of e-mobility through self-initiated activities, and also through further encouragement of other institutions and organizations.**
3. PROPOSAL FOR ECO FUND ACTIVITIES TO PROMOTE E-MOBILITY

POSSIBLE SOURCES OF FINANCE (ECO FUND REVENUES)

In November 2018, the Government of Montenegro adopted the Decision on the Establishment of the Environmental Fund – Eco Fund (“Official Gazette of Montenegro”, 81/2018) with the aim of acting as a central national institution for financing and providing technical assistance to projects/programs in the field of environment, climate change and energy. It is stipulated by the Environment Law that the funds shall be provided from the Eco Fund for the preparation, implementation and development of programs, projects and other activities related to the conservation, sustainable use, protection and improvement of the environment, as well as the exploitation of renewable energy sources.

The following sources of funding for the Eco Fund are stipulated in Article 76 of the Environment Law (“Official Gazette of Montenegro”, 52/2016):

- budgetary funds;
- eco-charges;
- grants, donations and assistance;
- instruments, programs and funds of the European Union, United Nations and international organizations;
- foreign investments intended for environmental protection, and
- funds from other sources in accordance with the law

One of the fundamental principles of the Eco Fund operation has been the greatest possible linkage of revenues and expenditures, to ensure transparency of operations and monitoring the intended use of funds\(^7\). E-Mobility is part of the clean transport measures, so it is desirable to use the revenues from environmental pollution charges, coming from the transport sector, to incentivize it. As already pointed out, this shows the key role of **tax on the use of motor vehicles**. The funds collected on the basis of this tax are now revenue of the state budget amounting to approximately **EUR 8 million** per year and need to be first partly and then fully redirected to the Eco Fund. Given that traffic pollution is one of the major environmental issues in Montenegro, revenues from this tax should be directed not only to promoting e-mobility, but also to promoting cleaner transport in general, as well as to a wide range of environmental and nature protection projects, including projects related to air quality monitoring. First of all, as it has already been emphasized, it is necessary to 'green' this tax while maintaining the exemption for electric vehicles.

In addition to the domestic sources of Eco Fund revenues, it is necessary to use the international sources available. Namely, international public finances play an important role in supplementing the country's efforts to mobilize domestic public resources. Complying with obligations under international conventions (including low carbon development and response to climate change), developed countries committed themselves to jointly raise USD 100 billion from different sources in response to the needs of developing countries. The resource mobilization process will also be implemented through the Green Climate Fund (GCF), support to developing countries that have assumed commitments under the UN Framework Convention on Climate Change (UNFCCC). GCF is seen as one of the most significant international sources of funding for the promotion of e-mobility.

In the post-2020 period, and especially after accession to the European Union, funds from the **pre-accession funds** at first, and then from the **structural and investment funds** that will be available to the state, should be used primarily for improving public transport, which will require first extensive studies

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\(^7\) UNDP Montenegro: Proposal for the Eco Fund Operating Model, produced by EIHP, June 2017.
and plans, and then large investments, but will also open the possibility of systematic problem solving in public transport and the integration of e-mobility as one of the possible solutions.

**INCENTIVE SCHEME FOR ELECTRIC VEHICLES**

### 3.1.1. Subject Matter of Incentives

In the context of the promotion of electric vehicles, it is proposed that the grants are directed solely for the purchase of **new vehicles** which had not been registered at the time of import or sale. The vehicle may be purchased in Montenegro, Europe or anywhere in the world, but has to be registered in Montenegro. Incentives should only be given for battery electric vehicles. Plug-in vehicles need not be incentivized, primarily because they are competitive with conventional vehicles in the market and, moreover, due to the consumption of petroleum products they do not contribute significantly to the achievement of the goals, which is why they are considered only as a transient technology in the electrification of transport.

Incentives have to be focused on own four-wheeler vehicles to achieve the greatest positive social effects. Vehicle categories (according to European Classification\(^8\)) to be promoted are:

- **L6 and L7** - light and heavy four wheelers for commercial use solely designed for the carriage of goods or passengers:
  - **L6** - 4-wheel motor vehicles (light quadricycles) with an empty vehicle weight that equals \(\leq 350 \text{ kg}\), not including the battery weight of electric vehicles with a maximum design speed of \(\leq 45 \text{ km/h}\);
  - **L7** - 4-wheel motor vehicles with the exception of light four-wheelers (quadricycles) with an empty vehicle weight that equals \(\leq 400 \text{ kg (550 kg for cargo vehicles)}\), not including the battery weight for electric vehicles and whose maximum net engine power is \(\leq 15 \text{ kW}\);
- **N1** - Motor vehicles for the carriage of goods with a maximum permissible weight of \(\leq 3500 \text{ kg}\);
- **M1** - Passenger motor vehicles which, in addition to driver seats, have a maximum of eight seats.

For optimum allocation of funds, i.e. avoidance of co-financing of luxury vehicles, it is proposed that the subjects of incentives, in the context of a personal vehicle, be categorized into A (mini), B (small), C (medium) and J (SUV) segment according to the European Commission categorization\(^9\)).

### 3.1.2. Beneficiaries of Incentives

Common practice in the European Union is that target groups of beneficiaries of incentives include individuals, the public sector and the private sector (private business entities). In this way, the procedures for allocation of funds to natural persons are mostly carried out separately and within a certain timeframe, while the procedure for allocating funds to legal entities (public and private sector) is implemented unified.

#### 3.1.2.1. Individuals

Each natural person may get the incentive to purchase no more than **one new** vehicle. In order to be able to exercise the right to incentives, the specified conditions must be met, which usually include residence in the country where the incentives are given (as evidenced by a copy of the ID card), and compliance with the procedural actions defined in the public call for providing incentives (the delivery of all required documentation in the prescribed time and manner).

It is recommended to prescribe the obligation for the grant beneficiaries to keep owning or using (in the case of financial leasing) a co-financed vehicle for at least one year from the date of its first registration.

#### 3.1.2.2. Public Sector

The Public Sector plays an important role in promoting mobility, and the allocation of funds by the Eco Fund enables it to create a financially justified investment and thus actively contributes to the concept of e-mobility at its early stage of development. Public sector users should be allowed to procure one or more

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\(^9\) Source: [http://ec.europa.eu/competition/mergers/cases/decisions/m1406_en.pdf](http://ec.europa.eu/competition/mergers/cases/decisions/m1406_en.pdf) (the website accessed on 27 May 2019)
vehicles, whereby the maximum amount of co-financing (share in justified costs, i.e. maximum amount per user) is defined in the public call.

It is proposed that incentives do not exceed 50% of the eligible costs, i.e. the cost of purchasing the vehicle, with the stipulation of the maximum incentive amount. Further differentiation of the percentage of incentives can be made according to the level of development of the municipality, in a way that greater percentage incentives are allocated to underdeveloped municipalities. Another way of differentiation is the level of local air pollution and the level of nature endangerment which would allow the highest incentive rates in such areas.

- An example of good practice -

Electric vehicles for delivery - Croatian Post

Source: Croatian Post

In order to increase energy efficiency in transport, the Croatian Post responded to a public call of the Environmental Protection and Energy Efficiency Fund with the project "Green and Sustainable Transport in Post Traffic Using Electric Vehicles". The Fund recognized the project and approved the co-financing of the purchase of 20 electric quadricycles. The value of the investment in the purchase of electric vehicles amounted to HRK1,280,100 (approximately EUR170,000), and the Environmental Protection and Energy Efficiency Fund co-financed the procurement in the amount of HRK400,000 (approximately EUR53,000) of grants.

The introduction of electric vehicles enables the Croatian postal service to improve mobility in urban centers while delivering shipments and optimize efficiency as it allows a gradual reduction in the number of vehicles using fossil fuels. Also, electric vehicles contribute to reducing fleet operating costs and increasing the energy efficiency of the Croatian Post. With the use of electric quadricycles for delivery services, the Croatian Post will annually reduce its CO₂ emissions by 7.6 tonnes.

The quadricycles are manufactured by the company Dukati ENERGIA S.P.A. Their electric vehicles are approved for two people and are specially designed for maneuvering in tight spaces and with higher load carrying capacity they are the best response to the needs of postal traffic. Electric quadricycles achieve a maximum speed of 45 km/h and their range is 60 kilometers. The baggage compartment volume of 300 l and the carrying capacity of up to 200 kilograms are proven as an ideal solution due to the constant growth of package transport.

3.1.2.3. Private Sector (Legal Persons)

The same as for legal entities from the public sector, incentives should also be made available to legal entities from the private business sector. Namely, greening the fleet of vehicles in the private sector can certainly contribute to the development of e-mobility. The principle and the conditions for granting incentives can be the same as for the public sector. Attention should be paid to the rules on state aid, according to which the amount of incentives can be increased for medium (usually up to 10%) and small
and micro enterprises (usually up to 20%). In doing so, the maximum incentives for the same type of vehicle should always be the same.

### 3.1.3. Incentive Type and Amount

Due to the difference in the price of a conventional and electric vehicle, the most common way of incentivizing the purchase of an electric vehicle is through a one-off grant for the purchase of electric vehicles. This kind of incentive is proposed for all potential users (individuals, public and private business sectors). It is proposed that this kind of incentive system is carried out regularly for at least five consecutive years to enable the creation of a 'critical mass' of electric vehicles in Montenegro, which is needed for further development of e-mobility services.

In order to determine the optimum amount of incentives for the purchase of electric vehicles to be allocated to users in the form of grants, a number of factors need to be taken into account. The key determinants are incentive attractiveness and cost savings (EUR/tCO₂). By increasing the amount of incentives, the attractiveness of electric vehicle purchasing (financial viability) increases, but the social cost savings (EUR/tCO₂) generated by the purchase of this vehicle increase. The main factor influencing these parameters is the annual mileage of the vehicle. With a low amount of electric vehicle purchase subsidies, it would be financially viable (attractive) for only a small number of users who travel large annual mileage. On the other hand, a high amount of incentives would make the purchase of electric vehicles attractive also for users with a small annual mileage, where in case of allocating funds to such users, the cost of savings (EUR/tCO₂) would be extremely high. According to the cost and benefit analysis results¹⁰, the cost of saving is twice as low if the incentive of EUR 7,500 is given to buy a vehicle that annually travels 20,000 km, rather than an incentive of EUR 10,000 for a vehicle that annually travels 13,000 km.

![Illustrative relationship between attractiveness of electric vehicle purchase and social cost savings depending on the estimated annual mileage and the level of incentive - the method of determining the optimum amount of incentives](image)

**Figure 2**: Illustrative relationship between attractiveness of electric vehicle purchase and social cost savings depending on the estimated annual mileage and the level of incentive - the method of determining the optimum amount of incentives

Therefore, on the basis of all the analyzes carried out, it is recommended that the amount of EUR 7,500 is optimal for the award of grants for the purchase of electric personal and commercial vehicles (M1 and N1 categories) in Montenegro. This refers to users from all sectors (individuals, public sector, private legal entities).

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Regarding the level of incentives for the L6 and L7 category vehicles, the optimal amount for awarding a grant is proposed to equal EUR 2,000. In Croatia and Slovenia, it amounts to approximately EUR2,600 and EUR 2,000, respectively.

## 3.1.4. Incentive Allocation Mechanisms

Based on a public call for co-financing of the purchase of electric vehicles, funds are awarded to individuals or legal entities.

If there are available resources for this, it is recommended to publish a public call 2 times a year. On the one hand, this creates the continuity of the implementation of the measure which enables better planning both on the demand side and on the supply side. The discontinuous implementation of this measure may potentially lead to adverse effects on the market. On the other hand, the analysis of the effects of each public call can point to the need for certain adjustments and improvements to the further implementation of the measure. In addition, media attention is intensified during the public call period, which increases the visibility of the implementation of the measure and contributes to raising public awareness of e-mobility and the perception of positive operation of the Eco Fund.

It is recommended to evaluate each application in response to a public call solely in the order of the application. Specifically, it was concluded that introducing any additional elements to be scored (scoring with regard to the vehicle category, scoring with regard to property or income censuses) would greatly impede the administrative implementation of the measure. Therefore, it is recommended that applications are processed and approved according to the order of the application, and it is **extremely important to establish a good web application system** that will be able to display the number of applications received and the amount of remaining funds available at any time.

Additional documentation for application must be extremely simple, especially for individuals, and must include proof of identity of a natural person or legal person with a permanent residence/place of registration in Montenegro and an offer from a dealer/distributor of vehicles with attached information on the technical characteristics of the vehicle (category, manufacturer, type, model, power, etc.). For legal entities, depending on the general rules of the Eco-Fund, additional certificates will probably be required (e.g. tax returns, etc.).

The payment of funds can be completed only after proof of payment and registration of the vehicle is provided. Depending on the determined rules for the Eco Fund operation, it is possible to establish business relations with banks and allow for the immediate deduction of the incentive amount approved by the Eco Fund from the loan for the vehicle purchase, which is paid directly to the account of the bank in case of such arrangements.

The Table below summarizes the basic features of the proposed incentive scheme of the Eco Fund for electric vehicles.

### Table 1: An overview of the basic features of the proposed incentive scheme of the Eco Fund for electric vehicles

<table>
<thead>
<tr>
<th>Target group (beneficiaries)/ elements of incentive scheme for electric vehicles</th>
<th>Individuals</th>
<th>Public Sector</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject matter of incentive</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal vehicles of category M1, N1, L6 and L7 A (mini), B (small), C (medium) and J (SUV) segment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Conditions for application</strong></td>
<td>Natural person with a place of residence in Montenegro</td>
<td>Legal person registered in Montenegro</td>
<td>Legal person, entrepreneur registered in Montenegro</td>
</tr>
<tr>
<td><strong>Incentive type</strong></td>
<td>Grant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Incentive amount</strong></td>
<td>For M1 and N1 – EUR 7,500 For L6 and L7 – EUR 2,000 up to 50% of justified costs</td>
<td>For M1 and N1 – EUR 7,500 For L6 and L7 – EUR 2,000 up to 50% of justified costs</td>
<td>For M1 and N1 – EUR 7,500 For L6 and L7 – EUR 2,000 up to 50% of justified costs</td>
</tr>
</tbody>
</table>
3.1.5. Estimates of the Required Funds for Incentives

According to the scenarios for development of e-mobility in Montenegro\(^\text{11}\), the share of 1% of electric vehicles in the total number of passenger cars in Montenegro could be achieved by 2025. That number would be 2,255 of electric vehicles. It may be expected that some of these vehicles will be purchased with the incentives. The presumed share is about 2/3, which makes about 1,500 vehicles. If we assume that the incentive will take place in a five-year period from 2021 to 2025, this would mean that on an annual basis the resources to foster the purchase of around 300 vehicles should be provided. With the recommended co-financing of EUR 7,500 per vehicle, this would mean that **EUR 2,250,000 should be provided annually**.

For comparison, in Croatia, the Fund in 2019 provided around EUR 4,500,000 to foster the purchase of electric vehicles to citizens and legal entities, while in Slovenia this amount was EUR 3,600,000.

Eco Fund revenues that are reallocated from the state budget and which Eco Fund is collecting only on the basis of existing eco-fees will not be sufficient for such a scheme of incentives. As already mentioned, one of the solutions for the permanent provision of funds is the ‘greening’ of motor vehicle taxation and the reallocation of part of the funds from this tax to the Eco Fund and their use for the cleaner transport projects. In addition, it is crucial to attract the resources of international institutions and to commit them to foster e-mobility.

In addition, it should be noted that it cannot be expected that in the first year of the incentive scheme, the targeted 300 assigned incentives will be realized. More likely, it will be enough to start with the funds sufficient to foster about 50 electric vehicles (EUR 375,000), but it is also expected that the interest for incentives in the next Public Call will be much higher and thus the required funds will have to be provided.

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\(^{11}\) UNDP Montenegro: Situation Analysis of the Montenegrin Legislative, Institutional and Financial Framework for E-Mobility, produced by EIHP, February 2019
3.1.6. Risks and Protection Mechanisms

When establishing electric vehicle incentive schemes it is also necessary to take into account possible negative effects as well as potential misuse.

The potential negative effect of granting the purchase of electric vehicles to consumers is their potential impact on the formation of their retail price by the distributors. It is therefore recommended to allow the allocation of funds for vehicles purchased in Montenegro, but also in any other country, or imported in their own arrangement.

On the other hand, it is necessary to prevent possible misuse of granting the funds by the user in sense of further resale of the vehicle for which the funds were allocated. Therefore, it is recommended that the Public Call defines the conditions that obligate the beneficiary of the grant to retain ownership or use (in the case of financial leasing) of a co-financed vehicle for a specified period from the date of the first registration (e.g. one year), whereby the Eco Fund retains the right to control the status of ownership of a co-financed vehicle.

The Eco Fund should also retain the right to monitor the intended use of the Eco Fund's resources for the entire duration of the concluded contract, including the conditions that the selected applicant would have to fulfill and which were the basis for the approval of the funds and the conclusion of the contract.

### INCENTIVE SCHEME FOR CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLES

In addition to electric vehicle incentive schemes, the Eco Fund should also foster the development of electric vehicle charging infrastructure. Incentives should be aimed at legal entities from the public and private sectors.

The basic investment in the charging infrastructure includes the purchase of a charger, the fee for connection to the distribution system of electricity and preparatory works (the power and communication port performance and parking lot), installation and commissioning of the charger.

From the previous experience of the EU countries in the context of providing financial incentives for infrastructure, it is obvious that, it is generally considered as a justified expense only to be a purchase of charger, while connection fees and preparatory works are, in principle, an unjustified expense. Given the specificity of the existing market in Montenegro, the fee for connecting to the distribution system could be an obstacle to the development of publicly available infrastructure. Therefore, taking into account the fact that the compensation in question is a predictable and transparent expense, it is proposed to consider it as a part of the justified expense of co-financing. On the other hand, in order to motivate the investor to select the optimal locations, which also require a relatively small amount of preparatory work, it is suggested that the works item does not represent a justified expense.

Table 2: Examples of investment incentives for procurement of EV charging infrastructure in the region

<table>
<thead>
<tr>
<th>Users of funds</th>
<th>Amount</th>
<th>Justified investment expense</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Croatia</strong></td>
<td>Maximum 200,000 HRK (about 26,600 EUR) per user. The amount of funds allocated must not exceed 40% of the justified costs.</td>
<td>Chargers with a minimum total power of 50 kW (DC) or 22 kW (AC), equipped with connection systems according to accepted European standards that support possibilities of charging the fee, reporting and analytics. Costs include equipment and start-up expenses, software billing and analytical costs, and the costs of expert supervision by a licensed engineer. The costs of the connection to the distribution network, as well as the costs of installing the system for own charging power supply, do not represent justified costs. VAT is a justified cost if it is not recoverable, or if the applicant is not entitled to deduct.</td>
</tr>
<tr>
<td><strong>Slovenia</strong></td>
<td>A non-refundable financial</td>
<td>Justified costs include the purchase of a new charging station.</td>
</tr>
</tbody>
</table>


parks). The charging station must be located in the area of the municipality that submitted the request. Municipalities can manage the charging stations themselves or can contractually assign them to the management of the protected area operator. incentive up to 100% of the value for each charging station, but not more than 3,000 EUR for one AC charging station, or not more than 5,000 EUR for one DC charging station. Costs that are not justified include VAT, connection point, parking lot arrangements and corresponding street markings, including a traffic sign.

Directive 2014/94 / EU on the establishment of infrastructure for alternative fuels prescribes basic guidelines for the establishment of a publicly accessible infrastructure for charging electric vehicles. In this context, Montenegro should establish a common framework of measures whose results will be manifested in a sufficient number of publicly available fast chargers. Therefore, it is suggested that the incentives in Montenegro are initially targeted towards such infrastructure (chargers with a power exceeding 22 kW).

The basic elements of the incentive scheme for charging stations in Montenegro are shown in the table below.

**Table 3: An overview of the basic features of the proposed incentive scheme for infrastructure for charging electric vehicles by the Eco-Fund**

<table>
<thead>
<tr>
<th>Target group (beneficiaries) / Elements of incentive scheme for electric vehicles</th>
<th>Public Sector</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject matter of incentive</td>
<td>Procurement of charging stations for electric vehicles; Connection of the charger to the distribution network</td>
<td></td>
</tr>
<tr>
<td>Incentive type</td>
<td>Non-refundable funds (grant)</td>
<td>Up to 40% of justified expenses.</td>
</tr>
<tr>
<td>Incentive amount</td>
<td>In the case of protected areas up to 80% of justified expenses. In other cases up to 60% of justified expenses.</td>
<td></td>
</tr>
<tr>
<td>Justified expense</td>
<td>The cost of charging station Connection fee for distribution system</td>
<td></td>
</tr>
<tr>
<td>Non-justified expense</td>
<td>The cost of performing preparatory works and accompanying installations The cost of connecting the charging station to the previously secured power and communication port (commissioning) The cost of marking parking lots and purchasing and setting up a traffic sign</td>
<td></td>
</tr>
<tr>
<td>Incentive payment method</td>
<td>Payment to the user's account based on proof of installation and commissioning (copy of the invoice, proof of payment, copy of the license for use, report of the supervising engineer)</td>
<td></td>
</tr>
<tr>
<td>Implementation mechanism</td>
<td>Public call, once a year; System for e-application to the public call</td>
<td></td>
</tr>
<tr>
<td>Application conditions</td>
<td>Units of local self-government; Public institutions</td>
<td>Legal entities outside the public sector; Craftsmen</td>
</tr>
<tr>
<td>Application documents</td>
<td>Application Form; Main project with a BoQ; Proof of ownership over the land or construction rights</td>
<td>Application Form; Main project with a BoQ; Proof of ownership over the land or construction rights</td>
</tr>
</tbody>
</table>
The general availability of infrastructure for the charging of electric vehicles will greatly affect the convenience and the confidence associated with the use of such vehicles. Therefore, in order to maximize the potential impact on the development of the market, apart from encouraging the development of the infrastructure in question, it is proposed to define the basic guidelines for the visibility of the chargers themselves. By marking (e.g. in green color) the parking spaces with the charger, and placing a traffic sign to introduce parking restrictions for non-electric vehicles an additional promotional effect will be provided.

- An example of good practice -

The island of Krk

Source: the City of Krk

Since 2016 there are eleven charging stations for electric cars on the island of Krk located throughout the island. This investment is a joint project of all local self-government units, funded by the Environmental Protection and Energy Efficiency Fund.

The responsibility for the operation and maintenance of charging stations was taken over by the waste and energy management Company of Ponikve eko otok Krk, whose task it to implement all strategic utility projects. The project has invested a total of about EUR 126,000 (including VAT), of which the Fund's support amounted to 60%, while the rest was provided by all units of local self-government, in accordance with the number of chargers in their area.

The general availability of infrastructure for the charging of electric vehicles will greatly affect the convenience and the confidence associated with the use of such vehicles. Therefore, in order to maximize the potential impact on the development of the market, apart from encouraging the development of the infrastructure in question, it is proposed to define the basic guidelines for the visibility of the chargers themselves. By marking (e.g. in green color) the parking spaces with the charger, and placing a traffic sign to introduce parking restrictions for non-electric vehicles an additional promotional effect will be provided.
4. CONCLUSIONS

The development of e-mobility as a basis for sustainable and clean transport is one of the key elements of the transition towards the low carbon economy. The dynamics of this process depend on the success of overcoming barriers that prevent or slow down the development of market and business models, increase the share of electric vehicles in the fleet and build the infrastructure for their charge. Globally speaking, e-mobility is still at the initial stage of development, and in order to achieve a state where the further development takes place exclusively on market principles, a wide range of incentive measures by the countries are being implemented to encourage this development. Circular interdependence between the number of electric vehicles and publicly available charging infrastructure is well known - a small number of vehicles make investment in infrastructure financially unprofitable, and poorly developed infrastructure discourages users from purchasing an electric vehicle. It is therefore advisable to act at the same time with incentive measures on both these market segments.

That is precisely the idea of establishing financial incentives for e-mobility in Montenegro. The proposal is based on previously conducted analyzes of the Montenegrin legislative, institutional and financial framework and the e-mobility market in Montenegro as well as cost-benefit analyzes for individual target groups and Montenegrin society as a whole. All such analyzes have shown that financial incentives are absolutely necessary for the development of e-mobility in Montenegro.

Specifically, although some technological features of electric vehicles pose drawbacks in relation to conventional vehicles (charging time, shorter range), the key barrier for purchasing such a vehicle is the higher purchase price. In countries that have opted for the development of e-mobility, a number of measures have been designed which seek to increase the attractiveness of their procurement and use. While for the use of electric vehicles in Montenegro there is an exemption from the obligation to pay annual taxes on the use of vehicles, financial incentives for the purchase of such vehicles are missing.

For the purpose of defining the suggestions of these incentives, examples of good practice from the region, i.e. a successful incentive scheme implemented by existing Eco funds, have been used, which are identical to the newly established Montenegrin Eco Fund. It is a scheme of providing grants for the purchase of electric vehicles both for citizens and for legal entities from the public and private sector. The suggested amount of incentives was determined on the basis of cost and benefit analysis, whereby the social benefit and attractiveness of the incentives for the ultimate vehicle buyers were seen.

In addition to the electric vehicle incentive scheme, it is also proposed to set up a scheme of incentives for the development of electric vehicle charging infrastructure, especially by local government units, which, with the development of infrastructure and other non-financial measures in their environment, can significantly accelerate the development of e-mobility.

To establish a scheme of incentives, it is necessary to provide sufficient financial resources. To this end, it is necessary to ensure that the Eco Fund has stable and sufficient sources of revenue, and it is certainly proposed to use tax on the use of vehicles for that purpose, which must be "greened" beforehand. It is also necessary to work intensively on attracting international resources for this purpose.

Finally, it should be emphasized that, apart from formulation of State financial incentives, encouraging mobility also includes a whole range of other activities that need to be taken in Montenegro in the short term. Such activities include:

- complementing the legislative and strategic framework with clear objectives for the use of electricity in transport, in accordance with EU legislation on the establishment of an alternative fuel infrastructure;
- the creation of an incentive legislative framework as the basis for the development of market and business models for e-mobility and the integration of electric vehicles into the electricity system in accordance with EU legislation on the internal electricity market;
- creating more favorable conditions for the development of infrastructure for charging electric vehicles through tariff systems, and
- implementation of a series of promotional and educational measures aimed at citizens, the public sector and private legal entities.
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